constraints of heart dosimetry (V45 < 50%, V60 < 30%, heart mean dose < 20Gy) predict late damage; do not predict AP. Therefore it could be considered a side-effect non-dose-dependent.
Conclusions. AP is a rare complication of BC radiotherapy treatment and its diagnosis is clinical. Because it can occur with very low doses, it should be considered in the differential diagnosis of all chest pain episodes in BC patients undergoing radiotherapy, regardless the dose administered at its onset.

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Non-invasive mammography image-guided brachytherapy for the boost in breast cancer

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Introduction. Radiotherapy is the standard treatment after breast conserving surgery (BCS) in early-stage breast cancer. There is evidence that an additional boost in tumor bed decreases the risk of local recurrence. However, there is not an ideal method of radiation delivering. New technologies have improved accuracy on irradiation of malignancies in order to not injure normal tissues (i.e. IGRT) Non-invasive breast brachitherapy (NIBB), AccuBoost, is our new system at ICO.
Purpose. Implementation of NIBB since April 2012. We have started a Phase II trial to evaluate the feasibility, toxicity and local control of AccuBoost in patients with early-stage breast cancer.
Materials and methods. AccuBoost system applies breast brachytherapy without invasive catheters, and with mammographic image guidance using stereotactic localization for tumor bed boost. AcuuBoost applicators are selected by radiation oncologist who delimitates tumor bed (PTV) by mammography before each fraction delivery. From July 2012 to January 2013 we performed 56 treatments with AccuBoost.
Results. All patients underwent BCS before receiving RDT. Boost (16 Gy) was delivered while WBRT (50 Gy) administered. Reproducibility of the tumor bed by mammography to be covered by AccuBoost applicators and good tolerance to compression in CC and ML orientations were required. Tumor bed identification required intraoperative clip placements to be defined and also using either seromas or postoperative changes. The mean CC and ML breast compressions were 5.1 and 6.1 cm, respectively. 35% of the sessions were delivered using 6.0 round shape applicator. 27% were performed with 5.0 round shape and 5.3 D shape applicator.
Conclusion. NIBB is a unique and precise method of delivering HDR-photon irradiation to the tumor-bed tissue using mammographic image-guidance before each boost fraction delivery. AccuBoost allows a major optimization of external radiation units and profitability of HDR.

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Objective evaluation of radiation-induced skin toxicity

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Introduction. Skin is involved in most of radiotherapy (RT) treatments, however, systems to determinate the radiation-induced skin toxicity are usually based on visual subjective rating scales. Radiation causes a vascular skin response which increases as skin affectation increases. This response can be measured in order to obtain an objective assessment of radiation-induced toxicity.
Objective. To establish a measurement system that allows us to quantify skin toxicity produced by RT.
Materials and methods. A laser Doppler flowmeter (LDF), Periflux PF 3, has been used to measure in real time the cutaneous microcirculation. 1824 measurements (912 in the irradiated area and 912 in the not irradiated area) have been performed aiming to evaluate the cutaneous reaction over the irradiated skin area from patients of different pathologies undergoing RT. A baseline measure for every measured point is taken before starting the RT treatment. Furthermore, to be able to observe the changes in the microcirculation of the irradiated area with the delivered dose, several sets of measurements are taken at the same points along the treatment and for one month after completing the RT treatment. At the same time, we performed a clinical assessment of skin toxicity with the visual rating scale commonly used in RT.
Results. From the analysis of averaged measurements it can be observed a significant increase of vascularization in the irradiated area which increases with the administered dose. However, the measurements in the non-irradiated areas do not show a significant increase of vascularization. The measurements made once the treatment has finished show that microvascularization decreases, tending to the baseline values.